

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE/Electrical & Electronics) (2011 Onwards) (Sem.7,8)

POWER SYSTEM ANALYSIS

Subject Code : BTEE-801

Paper ID : [A3032]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt ANY TWO questions.

SECTION-A

1. Write briefly :

- a) What is an infinite bus?
- b) Why short circuit study is needed?
- c) Differentiate between unsymmetrical and symmetrical short circuit.
- d) Give the function of current limiting reactors.
- e) Differentiate between steady state and transient conditions.
- f) What is bus, also define swing bus?
- g) What is acceleration factor in load flow study?
- h) Draw the equivalent circuit of three winding transformer.
- i) Define swing equation in stability study.
- j) In which fault all the three sequence currents are present and are equal?

SECTION-B

2. What is meant by decoupled load flow method?
3. Give the advantages and limitations of Newton Raphson method.
4. Distinguish between steady state, transient and dynamic stability.
5. Determine the symmetrical components of three voltages: $V_a = 100 \angle 0^\circ$, $V_b = 200 \angle 245^\circ$, $V_c = 100 \angle 105^\circ$ If the star connected load of 100 Ohm each leg is connected, Find power consumed by three phase load.
6. Give the representation of load in power system with expression.

SECTION-C

7. A 25 MVA, 13.2 kV alternator with solidly grounded neutral has a sub transient reactance of 0.25 p.u. The negative and zero sequence reactance are 0.35 and 0.01 p.u. respectively. If a double line- to- ground fault occurs at the terminal of the alternator, determine the fault current and line- to-line voltage at the fault.
8. Derive the swing equation of synchronous generator connected to infinite bus from the rotor dynamics, and extend the derivation for two parallel connected machines.
9. Draw and explain the algorithms and flow chart of Newton Raphson method used for load flow analysis in power system networks.